

Claims 1 and 15 are amended. Claim 35 is added. The following is a claim listing showing the claim status.

1. (currently amended) A catalyst comprising:
a metal oxide support;
a coating comprising zinc on the metal oxide support; and
palladium in contact with said coating;
wherein the catalyst possesses a volumetric productivity of
such that, when tested in a measurement in which the catalyst is
placed in a reactor and exposed to premixed, vaporized water and
methanol at a water to methanol ratio of 1.78, at 300 °C, about 1
atm pressure and a contact time of 100 ms (for powders and
crushed pellets) or 150 ms (for felts and foams), at least 10,000
ml H₂ / ml catalyst·hr is produced.
2. (canceled)
3. (canceled)
4. (canceled)
5. (previously presented) A method of making a catalyst,
comprising the steps of:
providing a solid metal oxide support;
adding a solution comprising dissolved zinc to the solid
metal oxide support, or adding a solid metal oxide support to a
solution comprising dissolved zinc;
adding a base to increase pH; and

subsequent to at least a portion of the step of adding a base, depositing Pd.

6. (original) A catalyst made by the method of claim 5.

7. (Previously Presented) The method of claim 5 wherein the metal oxide support comprises alumina, titania or zirconia.

8. (Previously Presented) The method of claim 5 wherein the metal oxide support is deposited onto a large pore support.

9. (Previously Presented) The method of claim 5 comprising a step wherein the zinc is completely dissolved in said solution.

10. (Previously Presented) The method of claim 5 wherein there are no metals other than zinc in said solution.

11. (Previously Presented) The method of claim 5 wherein said solution comprises 0.1 to 3 M zinc.

12. (Previously Presented) The method of claim 5 wherein the base is added after the zinc solution is added.

13. (Previously Presented) The method of claim 12 wherein base is added to result in a pH of 7 or greater.

14. (Previously Presented) The method of claim 13 further comprising a step of calcining at 200 to 400 °C.

15. (currently amended) The method of claim 12 wherein Pd is deposited from a solution comprising dissolved Pd.

16. (previously presented) The method of claim 15 wherein the solution comprising Pd further comprises Ru.

17. (Previously Presented) The catalyst of claim 1 wherein the metal oxide support constitutes 50 to 90 wt% of the catalyst; zinc oxide constitutes 10 to 30 wt% of the catalyst; and Pd constitutes 1 to 15 wt% of the catalyst.

18. (Previously Presented) The catalyst of claim 17 wherein the metal oxide support comprises alumina, titania or zirconia.

19. (Previously Presented) The catalyst of claim 17 possessing a volumetric productivity of at least 40,000 ml H₂ / ml catalyst·hr.

20. (Previously Presented) The catalyst of claim 17 possessing a volumetric productivity of 20,000 to 90,000 ml H₂ / ml catalyst·hr.

21. (Previously Presented) The catalyst of claim 20 comprising 2 to 10 wt% Pd.

22. (Previously Presented) The catalyst of claim 21 comprising 0.2 to 5 wt% Ru.

23. (Previously Presented) The catalyst of claim 1 wherein the metal oxide forms a layer having a thickness less than 1 mm on a large pore support.

24. (Previously Presented) The catalyst of claim 23 wherein

the metal oxide forms a layer having a thickness less than 40 μm , and the large pore support comprises a foam or felt.

25. (Previously Presented) The catalyst of claim 23 wherein at least 50% of the catalyst's pore volume is composed of pores in the size range of 0.3 to 200 microns.

26. (Previously Presented) The catalyst of claim 17 characterizable by a specific activity of greater than 1.5 mol methanol converted/(g catalyst)(hr) when tested at 400 $^{\circ}\text{C}$, 25 msec contact time, 1.8 steam-to-carbon ratio with a pressure drop of less than 25 psig.

27-30. (Canceled)

31. (previously presented) The method of claim 5 wherein a zinc-containing layer is formed on the metal oxide support; and further comprising a step of drying the zinc-containing layer;

wherein the step of depositing Pd occurs subsequent to said step of drying.

32. (previously presented) The method of claim 31 wherein the catalyst is prepared and reduced under hydrogen with temperatures never exceeding 400 $^{\circ}\text{C}$.

33. (previously presented) The method of claim 15 wherein the catalyst is prepared and reduced under hydrogen with temperatures never exceeding 400 $^{\circ}\text{C}$.

34. (previously presented) The method of claim 5 wherein the

catalyst is prepared and reduced under hydrogen with temperatures never exceeding 400 °C.

35. (new) The method of claim 5 wherein Pd is deposited by impregnation from Pd dissolved in solution.